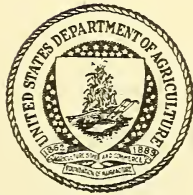


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Magnolia



Forest Service

U. S. DEPARTMENT OF AGRICULTURE

MAGNOLIA

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Magnolia lumber as found on the market is made up largely of two southern species—southern magnolia (*Magnolia grandiflora*), which probably furnishes over 50 percent of the magnolia lumber produced, and sweetbay (*M. virginiana*).¹ These magnolias² are medium- to large-sized,³ conspicuous trees that grow scattered through the forest, especially along streams and near swamps where the soil is moist. Southern magnolia is very popular for ornamental planting⁴ because of its glossy, evergreen leaves, large, fragrant, white blossoms, and the peculiar cone-like fruit from which the red seeds hang by threads.

The wood of southern magnolia resembles yellow-poplar but is somewhat heavier, harder, and stronger.⁵ It was formerly marketed in mixture with yellow poplar and sold as such but is now sold largely under the name magnolia. The most exacting use of magnolia is for venetian blind slats for which the wood has proved well suited on account of its ability to remain flat without cupping or twisting. About two-thirds of the magnolia used in manufacturing wooden products goes into furniture.

Nomenclature.—Southern magnolia is often called evergreen magnolia and frequently simply magnolia. Other names sometimes used are big laurel, bull bay, and laurel bay. Sweetbay is sometimes called swamp magnolia, or more often simply magnolia. Other names are white bay, swamp laurel, and swamp bay.

Distribution and growth.—The natural range of growth of southern magnolia is along the Atlantic coast from southern North Carolina to Central Florida and westward along the Gulf coast into eastern Texas (Fig. 1). It is generally found within 100 miles of the coast except in the Mississippi Delta, where it grows throughout the State of Louisiana and in southern Arkansas.

Southern magnolia requires a rich soil and considerable moisture for its best growth but will not survive long inundations. It does not occur on the lower bottoms of the Mississippi River that were overflowed before the levees were built and seldom on the higher bot-

¹ Including the variety *M. virginiana australis*.

² Another magnolia cut for lumber is the cucumbertree (*M. acuminata*) of the Appalachian Mountains. The lumber produced from this species has come largely from West Virginia and adjoining States. It has not been reported in the lumber statistics of the Bureau of the Census as a separate species under its own name since 1928. It is probable that a large proportion of the comparatively small quantity of cucumbertree cut for commercial purposes in recent years has been marketed in mixture with yellow poplar and sold as such.

In addition to the three magnolias of some commercial importance, several other species grow naturally in the eastern forests of the United States but are seldom used for lumber. They include bigleaf magnolia (*M. macrophylla*), umbrella magnolia (*M. tripetata*), and Fraser magnolia (*M. fraseri*).

³ Southern magnolia trees occasionally exceed 100 feet in height and approach 5 feet in diameter.

⁴ A considerable proportion of American cities with suitable climate have specimens of southern magnolia in their parks.

⁵ This applies also to cucumbertree. No data is available on the strength properties of sweetbay. It is reported to be much like southern magnolia in appearance and properties.

toms. It is usually found on moist, well drained soils along streams and on other moist locations in the uplands. In Louisiana and Mississippi it is most abundant in the hills between Vicksburg and Baton Rouge.

Under favorable conditions the growth is fairly rapid. The tree will endure a considerable amount of shade during early life but requires more sunlight as it approaches maturity. The seeds are distributed mainly by birds and animals.⁹ It does not grow in pure stands but in mixture with other species such as yellow-poplar, sweetgum, oak, and hickory. Southern magnolia trees grown under favor-



FIGURE 1.—Range of southern magnolia (*Magnolia grandiflora*).

able conditions in the forest generally reach a height of 60 to 80 feet and a diameter of 2 to 3 feet at an age of 80 to 120 years. Forest-grown trees of saw-timber size are frequently clear of branches up to 40 feet from the ground.

The range of growth of sweetbay is more extensive than that of southern magnolia. It is found throughout the same area as southern magnolia and also as far north as a line from central New Jersey to

⁹ Based on examinations of the stomach content of gray squirrels, opossums, and several birds, including quail and wild turkey.

the southeastern tip of Oklahoma.⁷ Sweetbay, like southern magnolia, is a moisture-loving species which grows in mixture with other species and is commonly found near streams, ponds, or swamps but not in the bottom lands of the Mississippi River. It is most abundant and grows to its largest size in Florida on the hummocks (mounds raised above the surrounding level). Here the tree reaches a height of 50 to 75 feet and a diameter of 2 or more feet. Farther north sweetbay is much smaller.

Supply.—The total stand of southern magnolia of saw-timber size was recently estimated at not less than 1,000,000,000 board feet. In a forest survey recently conducted in the Southern States the entire natural range of southern magnolia was covered except the portion in North Carolina and northern South Carolina. In no State were enough trees found to justify listing it as a separate species. It is probable that Louisiana contains more southern magnolia than any

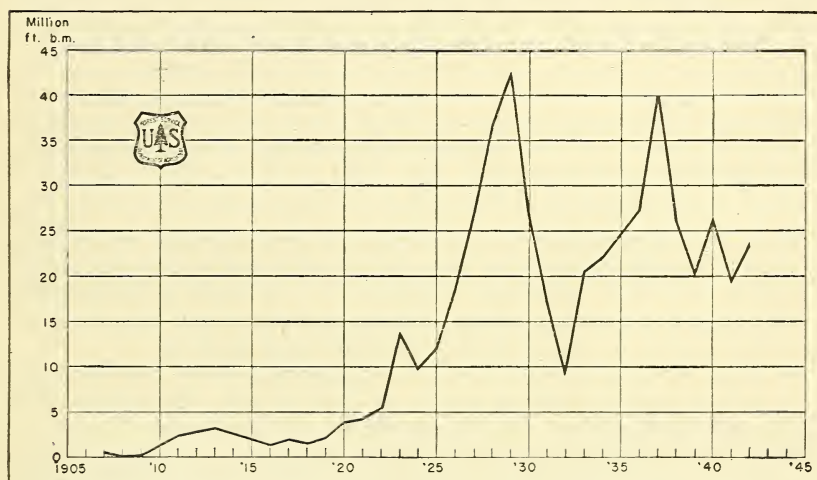


FIGURE 2.—Lumber production of southern magnolia and sweetbay, 1907-42.

other State and Florida comes next. No estimate of the stand of sweetbay is available.

Production.—Magnolia was first listed as a separate species in the lumber production statistics of the Bureau of the Census in 1907. In that year the reported production was 536,000 board feet. By 1922 production had risen to about 10 times that amount (Fig. 2). After 1922 production rose more rapidly and reached a maximum of 42,343,000 board feet in 1929. This was followed by a marked drop in the years of depression and then by recovery. The average annual cut of magnolia lumber for the 10-year period 1933-42 was approximately 25,000,800 board feet. The reported cut in 1942 was 23,363,000 board feet. Louisiana has been the leading State in the production of magnolia lumber for the past 20 years.⁸ Florida, Mississippi, or Texas has occupied second place. During the 5-year period 1936-40 about one-fifth of the magnolia lumber produced came from Louisiana.⁹

⁷ The range of sweetbay overlaps the southeastern portion of the range of cucumbertree.

⁸ Except in 1938 and in 1940 when Florida ranked first.

⁹ Production of magnolia lumber by States is not available for 1941 and 1942.

Properties.—The sapwood of southern magnolia is yellowish white and the heartwood light to dark brown with a tinge of yellow or green. Occasionally the heartwood contains colorful greenish-black or purplish-black streaks. The annual growth rings are distinct and are marked by a thin whitish line at the end of the year's growth. The wood has a close, uniform texture and is generally straight-grained. It closely resembles yellow-poplar from which it cannot be separated without the use of a compound microscope. Southern magnolia wood is moderately heavy,¹⁰ moderately low in shrinkage, moderately weak in bending and compression, moderately stiff, hard, and high in shock resistance. It can be seasoned so that it will stay in place without warping or twisting by the use of a considerably milder kiln-drying schedule than is recommended for yellow-poplar, that is, a schedule involving lower temperatures and somewhat higher humidities and also requiring a longer time in the dry kiln.

TABLE 1.—*Machining properties of southern magnolia compared with those of yellow-poplar*

Species	Percentage of pieces in good condition after—					
	<i>Planing</i>	<i>Shaping</i>	<i>Turning</i>	<i>Boring</i>	<i>Mortising</i>	<i>Sanding</i>
Southern magnolia.....	65	25	79	69	32	37
Yellow-poplar.....	70	12	81	87	63	19

These figures represent the percentage of typical pieces which were in good to excellent condition after being subjected to the machining operation indicated. Southern magnolia did not show as satisfactory results as yellow-poplar in four of these operations and was superior to yellow-poplar in two of them—shaping¹¹ and sanding.

In steam bending operations southern magnolia shows less breakage than yellow-poplar, ranking nearly as high as oak. In resistance to splitting under nailing, southern magnolia is almost equal to yellow-poplar—a wood seldom exceeded in this property. In nail-holding ability, southern magnolia has an intermediate rank. The wood can be glued satisfactorily with careful control of gluing conditions. When used as a food container it has a slightly greater tendency than yellow-poplar to impart taste or odor, but is classed among the woods suitable for food containers.

Southern magnolia is not durable when subjected to conditions favorable to decay. In painting characteristics, the wood is classed with yellow-poplar, basswood, ponderosa pine, and the spruces in the group which includes woods on which house paints disintegrate more rapidly than on the cedars and white pines, but not so rapidly as on Douglas-fir, southern pine, and sweetgum. Magnolia takes stains readily or can be given a natural finish.

Definite information on the suitability of southern magnolia for paper pulp is not available. Both yellow-poplar and cucumbertree (woods closely resembling southern magnolia) can be readily pulped

¹⁰ The average weight of southern magnolia in an air-dry condition (12 percent moisture) is 35 pounds per cubic foot. Yellow poplar, a wood with which southern magnolia is often compared, weighs 28 pounds per cubic foot in an air-dry condition.

¹¹ Shaping is one of the most exacting of the machining operations used in woodworking. Of all the woods tested with a shaper mahogany ranked highest with 68 percent of the pieces showing satisfactory results, while basswood and cottonwood had less than 10 percent of good pieces.

by the sulfate or soda process to yield dark colored pulps whose uses are somewhat limited by the difficulty of bleaching.

No data is available on the strength properties of sweetbay. It is reported to be much like southern magnolia in appearance and properties.

Principal uses.—Practically all of the magnolia felled in logging operations is sawed into lumber which is used principally in the manufacture of furniture, boxes, venetian blinds, and sash, doors, and general millwork. Furniture is by far the largest use and accounts for about two-thirds of the total quantity of magnolia lumber used in the manufacture of wooden products. Somewhat over 10 percent of this total quantity is used for boxes and somewhat less than 10 percent for venetian blinds.

The slats used in venetian blinds are approximately $\frac{1}{8}$ inch thick, 21½ inches wide, and up to 8 feet in length. When in use they must remain flat and straight under a wide range of temperature and humidity conditions. Southern magnolia slats have fulfilled these requirements, and the species has taken its place with others, such as basswood and Port Orford white-cedar, as one of the preferred woods for this exacting use. Toys and refrigerators are among the products for which magnolia is used in comparatively small quantities.

Table 2 gives the amounts of magnolia used in the manufacture of wooden products in 1912, 1933, and 1940, including material in the form of lumber, veneer, and logs and bolts. This material is made up largely of lumber with much smaller amounts of veneer and some short logs and bolts sawed directly into squares and other forms of the approximate sizes needed for furniture or other wooden products.

TABLE 2.—*Magnolia used in the manufacture of wooden products*

Classes of products	1912	1933	1940
	<i>1,000 feet board measure</i>	<i>1,000 feet board measure</i>	<i>1,000 feet board measure</i>
Agricultural implements.....		4	
Boxes, baskets, and crating.....	5,449	3,865	3,675
Boxes, cigar and tobacco.....	75	391	
Brushes.....	2		
Car construction and repair.....		46	1
Caskets and burial boxes.....			11
Fixtures.....	27	1,178	1,018
Furniture.....	477	12,168	23,542
Handles.....		335	112
Kitchen cabinets.....		720	
Ladders.....		20	
Patterns and flasks.....			46
Printing material.....			1
Radio and phonograph cabinets.....			40
Refrigerators.....		188	299
Rollers, shade and map.....			14
Sash, frames, doors, blinds, and general millwork.....	117	164	1,420
Sewing machines.....		10	124
Sporting and athletic goods.....			3
Toys.....		11	519
Trunks and valises.....		6	
Vehicles, motor.....	9	3,590	99
Vehicles, nonmotor.....		1	
Venetian blinds.....			2,969
Woodenware and novelties.....		71	106
Total.....	6,156	22,768	1 33,999

¹ This figure is considerably larger than the figure for lumber production in 1940. Manufacturing establishments probably used more care than sawmills in separating magnolia from yellow-poplar.

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